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SOME ASPECTS OF THE TARIFF QUESTION.

THE protective policy of the United States has had unexpected successes and surprising failures. "Success" in this connection may be taken to mean that duties have brought about a considerable development of the protected industry, while "failure" describes those cases where there has been an absence of such a development. It need not be said that such success does not necessarily imply advantage to the community at large: it indicates only that the object in view has been attained by the protective measures. There have been curious differences in the extent to which this primary object has been attained; and the results have varied not only in different branches of manufactures, but, what is more surprising, in different sorts of agricultural production. The present paper aims to give some account of the more noteworthy of these cases, and to point out that underneath them all lies a common principle, and one not unfamiliar in economics.

The first case to which I will turn is that of the production of flax fibre. In general, agricultural commodities are exported from the United States on a large scale, and protective duties on them, while they have been frequently imposed, are nominal: agricultural products would not be imported in any event. But with flax we find the reverse of the usual conditions. Flax has been imported into this country for generations, and import duties have had no perceptible effect in checking importation or in stimulating the production of flax at home. During the colonial times, when the great textile inventions were yet to be perfected, and when household clothing was almost universally used, flax was raised and home-spun linen produced; and this would probably have been the case even without the bounties and premiums which were common during the colonial period.\* But, when the great inventions had caused the disappearance of household industry, flax and linen practically disappeared from the industry of the United States. The manufacture of cotton and woollen goods from domestic raw material arose, but that of linens hardly exists even in our own time. Only twine, thread, and a few coarse linen fabrics are now made in the United States. Duties on flax were imposed in 1828, again in 1842, again in 1846; during the Civil War, the duty was maintained, and was increased in 1870.† During the war, the deficiency in the cotton supply caused a temporary stimulus to flax-raising; and the increase of duty in 1870 was probably due to the wish of the farmers to continue growing flax in face of the renewed supplies of cotton. But the production of flax fibre has steadily declined nevertheless, and at the present time is not carried on at all in the United States.

\* Notices of these bounties are in Bishop's *History of Manufactures*, Volume I., and are also collected in Mr. E. A. Whitman's *Flax Culture in the United States*, which contains an excellent brief account of the flax industry.

† Whitman, *Flax Culture*, p. 24; Taussig, *Tariff History of the United States*, p. 227.

The census figures show very clearly what is the situation. The production of flax fibre in the United States in the census years was :—

In 1850, . . . . .	3,850 tons.
“ 1860, . . . . .	2,350 “
“ 1870, . . . . .	13,600 “
“ 1880, . . . . .	800 “

The small quantity of flax now raised is of coarse quality and quite unsuited to the making of linen cloth. Meanwhile, importation continues steadily. The imports of flax fibre were in 1886 3,700 tons, and in 1887 nearly 6,000 tons.

What, now, is the explanation of a state of things so different from that which prevails as to most agricultural products? We get hints towards a solution of the problem by examining the conditions under which flax is raised in foreign countries. In the first place, flax is eminently a product of intensive culture, and is grown in countries like Belgium and France, whose agriculture is typical of intensive culture.\* A laborious and careful preparation of the ground is required. Several ploughings and harrowings are called for; for the best flax, the land is trenched by spade. The ground must be carefully weeded, and “in Belgium the weeding is done by hand, when the plants are a few inches high, by women and children who crawl about on their hands and knees, with cloths to protect them from the ground, working always towards the wind, so that the plants may be at once blown back to an upright position.” From twenty-five to thirty tons of manure per acre are ploughed in, and, in addition, liquid manure is applied. The harvest is as laborious as

\*The best full account of the methods of cultivating flax and hemp is given in the report of the commission appointed by Congress during the Civil War. The report is in *Senate Executive Documents* (1864-65), No. 35. A briefer and useful account, from which we quote in the following pages, has been condensed from this source and others by Mr. Whitman in his *Flax Culture*.

the preparation. The plants are pulled by the roots, for cutting by machine or by scythe spoils the fibre; and, moreover, the part of the plant nearest the ground, which is lost by cutting, contains the best fibre.\*

The process of preparing flax for market, however, is by no means completed when it has been taken from the ground. It must first be rotted, then scutched, finally hackled. Rotting consists in immersing the plants in water, and thereby loosening the coarse external covering from the inner fibre which is to be converted into linen. In the United States, this has been done for both flax and hemp by "dew-rotting,"—that is, leaving the plants exposed to the dew in the fields; but this method, while simple and easy, makes poor fibre. Fibre of good quality can only be made by immersion during from five to ten days in water, which becomes foul and noisome from the decomposition of the plants. "The flax is then removed from the pools, and in this operation too much care cannot be used. Hooks or pitchforks injure the fibre, and the bundles must be handed out by a man who stands in the now disgusting pool."

These bundles when dried are ready for the next operation, scutching, by which the inner woody pith of the plant is removed. The ancient method of doing this was simply to beat the stalks with clubs, and the reader of Tourguéneff's novels need not be told that this method is still used in Russia. Elsewhere, machines are in use, but only to a slight extent. Machines for breaking up the pith seem easy to get, and are simple enough; in Ireland, this part of the process is carried out by putting the stalks under cart-wheels. But scutching proper, the removal of the broken pith, is generally done by hand, "by beating the fibre with a blunt knife while it is held over the edge

\* In reaping flax, "a careful hand, who carries his scythe low and cuts a level swath, may do excellent work, but many workmen will waste too much of the best portion of the stalk by leaving a high and uneven stubble." *Report of Commission of 1865*, p. 29.

of a sharpened board." \* Finally, after scutching, comes hackling, which corresponds to the carding or combing of wool and cotton, and which leaves the clean flax fibre ready for spinning. This again was done universally by hand at the time when the Commission of 1865 reported; and Mr. Whitman tells us it is still done "mostly by hand even in large mills." The nature of the fibre apparently prevents that use of machinery for which wool and cotton are so wonderfully adapted.

Hemp and flax are much alike, and what has been said in regard to flax applies in the main to hemp. Hemp of good quality must also be heavily manured, should be pulled or cut close to the ground, water-rotted, scutched, and hackled. Bounties on hemp as well as on flax were given in colonial times, and duties have been imposed on it without interruption since the formation of the Union; yet hemp of the finer sort has never been raised, and has always been imported in considerable quantities.

It should be noted, however, that the preceding remarks apply only to the cultivation of flax and hemp for the purpose of obtaining good fibre. Flax is grown in large quantities in the United States for the seed, and hemp of coarse quality is grown in considerable quantities. Flax for seed need not be heavily manured, nor need the seed be thickly sown; weeding is unnecessary; the plants may be cut by scythe or machine; the seeds are easily and quickly separated from the fibre. Seed is produced plentifully under these conditions, and is sold to oil mills;

\* *Report of 1865*, p. 32. Very recently (1885), a machine for scutching has been invented in France, which is said to work well. A process for rotting with warm water has also been invented in the same country, which is said to save time, to dispose of large masses of fibre at once, and to produce good quality. *Report of Flax and Hemp Spinners' and Growers' Association for 1887*, pp. 12-15, 25. Attempts to supersede the old methods have been numerous and hitherto unsuccessful, and it remains to be seen what will be the working of these new processes. If successful, they may serve, perhaps, with the aid of other inventions, to bring about great changes in the character and distribution of the culture of flax and hemp.

but the flax straw becomes coarse and almost useless, and is generally burned on the fields or sold for a trifle. Hemp cultivated in the same way, and then dew-rotted, yields a coarse fibre, suitable for bagging and other coarse fabrics; and it has been grown for such uses in considerable quantities, mainly in Kentucky and Missouri. In recent years, however, jute and other tropical substitutes have displaced it even for these purposes, and its cultivation seems to have well-nigh come to an end.\*

The cases of flax and hemp are not unfamiliar, for general attention has been called to them by the present discussion of the tariff question. There is another instance, in many respects similar, to which reference is rarely, if ever, made. This is the failure of our high duties on imported sugar to stimulate the cultivation of the sugar beet and the manufacture of beet sugar. We have always had duties on sugar, and they have generally been high. Since the Civil War, they have ranged about fifty, sixty, even seventy per cent. on the value. In continental Europe, beet sugar, while originally much stimulated by protection, has been able for many years to hold its own in competition with cane sugar. In France, the import duty on cane sugar and the excise tax on beet sugar are the same. In Germany, the excise is but little less than the duty; and in both countries beet sugar supplies the bulk of the consumption.† The processes for

\* The census figures of the production of hemp are :—

For 1850, . . . . .	35,000 tons.
1860, . . . . .	74,000 "
1870, . . . . .	13,000 "
1880, . . . . .	5,000 "

The Flax and Hemp Association Reports state the production to have been :

In 1884, . . . . .	3,500 tons.
1885, . . . . .	6,000 "
1886, . . . . .	10,000 "

"Jute has superseded American hemp or flax for bagging for cotton, and Manila and Sisal hemp are used in place of American hemp for cordage." *Report for 1885*, p. 25.

† The excessive drawbacks (often called bounties) which have been granted in recent years on the exportation of beet sugar from Germany, France, and

making beet sugar are public property, and our climate and soil are as well suited to the cultivation of the beet as are those of Central Europe. Attempts have been made in Maine, and an experiment is now being made in California in stimulating beet culture and making beet sugar; yet not even a beginning has been made in displacing cane sugar.

For an explanation of this phenomenon also, we may turn to the conditions under which beets are raised. These conditions are in many ways similar to those under which flax and hemp are cultivated.\* The ground must be thoroughly prepared, deeply ploughed, and frequently hoed. "The more the culture approaches that of a garden, the more the quantitative and qualitative yield will be increased." Between ten and fifteen tons of manure to the acre are applied, and are supplemented by other fertilizers. The roots are not ploughed up, but only loosened by a plough run between the furrows. They are pulled by hand, and care must be taken to prevent any bruise or cut, which may cause them to decay when stored. The leaves are cut off in the field by a knife. Ten or twenty laborers are needed to pull and prepare for transportation in one day the roots on an acre of land. So far there is an obvious analogy to the cultivation of flax and hemp; but, with beets, we have a still further characteristic of intensive culture. The beet cake which is left over in the sugar factory after the saccharine matter has been ex-

other countries, have given an extraordinary stimulus to the production of beet sugar. But this episode does not affect the point considered in the text; for, before the artificial stimulus began, the beet sugar industry had reached a position of independence. The Sugar Convention of last year (1888) promises to do away completely with this cause of complexity in sugar production.

\* See a *Report on the Culture of the Sugar Beet* made to the Department of Agriculture in 1880 by Mr. William McMurtrie. Quotations in the text are from this report, unless credited otherwise. An excellent brief account is given by E. W. Hilgard in the *Overland Monthly*, vol. viii. pp. 561-574. An account of the beet culture, designed to aid its introduction in this country, is given in Mr. L. S. Ware's *The Sugar Beet* (Philadelphia, 1880).

tracted is a valuable food for cattle, who again supply manure for further cultivation. In Germany, it is common to combine the processes of beet-raising, sugar-making, and cattle-feeding in one large undertaking. Where this is not done, the beet cake is often exchanged by the sugar factories, weight for weight, for beet roots. Obviously, the beet cake can have so high a value only in countries where stall-feeding is universal, or at least very common, and grazing land scarce. In a country like the United States, having a comparatively thin population, grazing land is plenty, and cattle-food correspondingly less in demand.\*

The characteristics of the branches of agriculture which we have been considering are, obviously, intensive cultivation and little use of machinery. The American farmer spreads his labor and capital thin over a large surface of land; and he uses machinery and labor-saving devices vastly more than the peasant or the landed proprietor of continental Europe. It is generally implied, in discussions of our international trade, that the extent and fertility of our soil explain our great agricultural exports. This is true, as far as it goes. But it should be qualified by adding that the products for which we have the most decided advantage and which we export in largest quantity are those suited not only for extensive cultivation, but suited also for the liberal use of agricultural machinery.

\*In recent years, experiments in making beet sugar have been made in California, which promise better than any of the earlier attempts. A small factory at Alvarado has been in operation for a number of years, and has paid. A much larger factory was put in operation in 1888 at Watsonville. It remains to be seen whether these enterprises will succeed in the long run, and there is a further question whether they would succeed if the duty on sugar were repealed. The fact that sugar from the Hawaiian Islands is admitted duty-free does not prevent the Californian beet-sugar enterprises from getting the practical benefit of a protective duty; for, as might be expected, this limited exemption from duty has not brought down the price or benefited consumers. It is not impossible that the extraordinary combination of soil and climate in California may bring about a development which could not be attained in other parts of the country.

Wheat and corn are the readiest examples of such products, and it is mainly for raising these that we have achieved the most remarkable triumphs in agricultural machinery. Flax, hemp, and beets, on the other hand, require intensive culture, and admit of little aid from labor-saving devices. The causes, therefore, of the agricultural competition of America, which has had so great an effect on the economic history of the last fifteen years, are to be found not only in physical conditions of soil and climate, but also in those moral and intellectual differences which lead the American to use better tools and more machinery than his European competitor. A keen and disinterested observer has gone so far as to refer the severity of American competition solely to this latter class of causes.\* The American farmer uses lighter and better tools; he works intelligently and strenuously while he is at it; his wagons are lighter by half, and his horses better and more easily harnessed; the mowing machine is used where the German peasant still uses the scythe or even the sickle; ploughs are better; reapers, binders, threshers, are used; time and labor are saved by riding instead of walking, by windmills and piping in place of the constant drawing and carrying of water which exhaust the German agricultural laborer. Every exertion, moreover, is more strenuous and active; the German laborer and farmer becomes another man when he has lived in the United States for a year or two.

If greater use of machinery, more intelligent use of time, and steadier exertion were of equal advantage in all branches of agriculture, they would not affect international trade; but they tell more in some branches than in

\*H. Semler, *Die wahre Bedeutung und die wirklichen Ursachen der nord-amerikanischen Concurrenz*, Wismar, 1881. The preface, by another hand, tells us that Mr. Semler is a German of San Francisco, "who has lived for many years in various parts of North America, and has observed its conditions with the eyes of a man of wide experience." The book was written with the object of conveying a lesson to German agriculture.

others. The American farmer tends to confine his agriculture to those products for which they tell, and the country imports agricultural products in which they do not tell. This principle, of course, does not apply to all the characteristics of our agriculture. Peculiar advantages of soil and climate suffice in some cases, of which cotton and tobacco are the most obvious and important, to give a superiority little affected by greater efficiency or intelligence. But the most striking features in our agricultural situation seem to be explained by this line of consideration; not indeed by this solely, but by this taken together with the effects of a wide extent of virgin and fertile soil.

We may now turn to another set of cases, in manufacturing industry, where a similarly uneven working of protection has shown itself. The first case of this kind is in the silk manufacture, which I will examine with some detail.

The manufacture of silk goods in the United States is in the main of recent date, having come into being since the Civil War. To this general statement, however, there are two exceptions. Sewing silk has been made, in one way or another, for over a century. For fifty years after the Revolution, its manufacture was carried on, chiefly in Connecticut, as a household industry. About 1829, machinery began to be invented, was continually improved, and made the industry a manufacture in the modern sense of the term. In 1852, a new step was taken in the production of machine-twist for the sewing-machines which were coming into general use. A very large development of this branch of the industry took place, and the Census of 1860 reported the value of sewing-silk made to be no less than \$3,600,000.\* The

\* See the sketch in Mr. Wyckoff's *Silk Manufacture in the United States*, pp. 32, 42-46. See also a curious anonymous volume, *Silk Culture in the United States*, New York, 1844, which gives interesting information as to the early

second branch of the silk manufacture, which sprang up before the Civil War, was the making of fringes and trimmings. We have little information as to its early history, but in 1860 its products were found by the census to be worth \$2,800,000. Neither the manufacture of sewing-silk nor that of trimmings received during this period any special encouragement from import duties. Sewing-silk had been admitted between 1833 and 1841 at a duty which gradually went down from forty to twenty per cent. Other silk manufactures were admitted free of duty. The tariff act of 1842 imposed higher specific duties for a few years, but the act of 1846 imposed a duty of thirty per cent. on sewing-silk and one of twenty-five per cent. on other silk manufactures. These rates were reduced to twenty-four and nineteen per cent. respectively in 1857. Notwithstanding these moderate duties,—moderate, at least, in comparison with those of later years,—there was a marked growth of both industries in the decade between 1850 and 1860.

In striking contrast with these two cases is the development of other branches of the silk manufacture. When the Civil War began, the duties on silks were raised, naturally and with good reason; and in 1864 the general duty was sixty per cent. Like so many other of the duties imposed at that time, it remained substantially unchanged after the war closed. The only change of much note has been a reduction to fifty per cent. in the tariff act of 1883. The high duty has brought into existence a considerable and varied silk manufacture. The effect in this case, unlike that of some other duties, was not intentional. The high duties on silks were imposed during the war in order to raise the revenue, with little thought of protection and without solicitation from domestic pro-

history both of silk culture and silk manufacture. In the introduction to the volume on manufactures in the Census of 1860 there is a good sketch of the history of the silk manufacture to that date.

ducers. In this respect, they differ from avowedly protective duties, like those on wool and woollens. But they have been followed by more marked effects; they have created an entirely new industry. The development of the silk manufacture was comparatively slow before 1870. It proceeded more rapidly in the years of activity preceding 1873. A new stimulus seems to have been given by the Centennial Exposition of 1876. The manufacture of trimmings on a wider scale was first undertaken; then that of ribbons came; soon afterwards that of brocaded and colored silks and satins, followed by that of plain piece-goods. The manufacture of silk handkerchiefs received a remarkable impulse from the Exposition.\* At the present time, the domestic silk products are at least equal in value to the imported.† Many kinds of silk goods are no longer imported. This is the case not only with sewing-silks and trimmings, but with many articles of which the domestic production did not begin before the war, such as handkerchiefs and most kinds of ribbons. Other articles, again, are made little or not at all, especially the finest piece-goods. Between these classes comes the debatable ground, on which foreign and domestic silks compete. Here may be placed most dress silks. The domestic producers in recent years have been steadily increasing their hold on goods of this sort, and now supply much the greater part of their consumption.

This brief sketch of the history of the silk manufacture shows how different has been its development from that of other textile industries. The manufactures of cotton and wool attained a large growth and a firm position long

\*See the sketch in Mr. Wyckoff's *Silk Manufacture*, especially pp. 42-51.

†Mr. Wyckoff estimated the value of silk goods made in 1886 at about \$60,000,000, probably a liberal estimate. The declared value of the imports in recent years has ranged between \$30,000,000 and \$35,000,000. Making allowance for duties and for undervaluation of imports (said to average at least twenty-five per cent.), we may conclude that the American public pays out about as much money for domestic as for foreign silks.

before the Civil War, while that of silks is, in the main, of very recent date. Silks are still imported more largely than other textile goods. The explanation of these facts must be sought in the character and processes of the industry.

The peculiarities of the silk manufacture are the result of the qualities of silk fibre.\* Raw silk is not made in the United States. Spasmodic attempts to encourage its production have been made, by bounties during the colonial period, by premiums in the early years of our national existence. At the present time there is a feeble attempt to establish it in California. The hopelessness of these attempts has permitted raw silk to remain on the free list, and the entire supply is obtained by importation. The raw silk so imported differs in marked ways from cotton and wool. In the first place, it corresponds not so much to raw cotton as to cotton carded and spun. It has been reeled from the cocoons, perhaps rereeled; and on the character of the reeling depends mainly the quality of the fibre.

There is found on the outside of every cocoon a considerable amount of light thread, containing more or less roughness and impurity, and, in general, unfit for reeling. This ought to be stripped off entirely, and accounted as "waste silk"; but some of it occasionally finds its way to the reel, in inferior grades of the raw material. When a filament that is fit for the reel has been reached, it is found that this filament is itself uneven in strength and thickness, the exterior layers being weaker and thinner than those nearer the insect. It is the business of the experienced reeler to put a thread of an even thickness and strength on his reel. To do this, he may have to unite four, five, or more filaments, from different cocoons, on a single thread, the number of filaments depending on their comparative thickness and the size of the thread required.

\*The description of the silk industry in the following paragraphs is derived largely from Mr. Wyckoff's instructive book on *The Silk Goods of America*; and the quoted passages are taken thence, unless credited to other sources. This volume is not to be confounded with the same writer's *Silk Manufacture*, to which reference has been previously made.

But, even after this laborious preparation,—which, we may note here, goes far to account for the failure to produce raw silk in this country,—the fibre is by no means of homogeneous quality, and by no means ready for the machine.

There are about a dozen distinct processes which raw silk must undergo to prepare it for the loom. . . . In each of these processes, except dyeing, imperfections in the thread cause loss of time and material. Suppose, for instance, that the raw silk, as imported, is uneven. That is to say, the continuous thread which is to be wound on a spool is found to be of irregular thickness as it unwinds from the reel. Such a thread is stronger in some parts and weaker in others. What happens? Probably the thread breaks in the first winding from the reel. The winding machinery stops automatically, and perhaps a portion of the thread which is weaker than the rest has to be pulled off and thrown aside as waste silk. Then a knot must be tied, and the winding goes on again. But, if the raw silk is very irregular in thickness, a similar accident can happen in any of the subsequent processes; a loom may have to be suddenly stopped. It is always the same story,—breakage, stoppage, waste of time (labor) and material. The loss of time, when machinery, running at high speed, has to be stopped, becomes a serious matter, from the mere fact that there is no production during the stoppage. "It costs," said a manufacturer, "fully five times as much to tie a knot in this country as in France."

To eliminate, as far as possible, defects of this class, silk is subjected to a series of sortings between the steps of its progress from the cocoon to the loom. . . . Our manufacturers take more pains than formerly to make their own sorting of the raw material fairly accurate, previous to the first winding. Moreover, at a later stage, before they are dyed, the threads are weighed with exactness by a mechanical process called "drumming," and sorted again. . . .

One of the preparatory processes that precede weaving has been mentioned as "picking." This consists of spreading out every thread of the warp separately, examining it with the utmost minuteness, and removing all knots, slugs, and irregularities. A large number of slowly moving threads are spread out like a huge fan; while keen eyes are bent upon them, and nimble fingers seize and extract the imperfections. . . . In Europe, where weaving is done mostly by hand, picking is part of the business of the weaver: he stops his loom at any moment to remove a knot or slug from the thread as it is woven. He is expected to turn out goods free from defects of this

character. The system here is entirely different, and it is necessary to have all the threads of warp and woof as perfect as possible, so that there shall be no stoppage of the power-loom.

The concluding words of this passage point to the striking contrast between the methods of the silk manufacture in this country and in those parts of France and Germany which still remain its chief seats. We cannot describe this instructive difference better than by quoting again from Mr. Wyckoff:—

The system of manufacture in Europe is entirely different from that which has grown up in this country. Judged from our point of view, the European manufacturer seems rather to be a mere contractor. He buys tram and organzine,—i.e., filling and warp,—which have been made at a separate factory. He sends this material to another establishment, a dye-house. Finally, he puts it out to weavers who have looms in their own homes. He has no factory and no machinery. Under such circumstances, it is not surprising that there is little improvement in machinery and methods from year to year. Our manufacturers have been obliged, on the contrary, to concentrate the work, so as to keep every portion of it under direct supervision. In several of our large silk mills, all the different processes are conducted under a single roof. . . . There is a marked disposition to try improvements in this country; and it is the general experience that the very best machinery, though at first far more costly, is in the end decidedly the cheapest. . . . The American system is largely a consequence of substituting machinery for hand labor.

A struggle thus seems to be going on in the silk industry between large factories and machinery, on the one hand, and household industry and manual labor, on the other. It is the same contest as that which went on in the cotton and woollen manufactures at the close of the last century and the beginning of the present, but with the conditions much more favorable to the survival of the old-fashioned system. The silk fibre is much less adapted to the complicated and rapidly moving machinery of textile manufactures than are cotton and wool. It is not surprising, after reading Mr. Wyckoff's description, to

learn that four-fifths of the looms in the city of Lyons are still hand-loom,\* and that Crefeld, the chief seat of the silk manufacture in Germany, is a town of household operatives. The necessities of the situation compel the silk manufacturers of this country to attempt the substitution of machinery for hand labor and the use of more elaborate and more efficient methods. Such a change alone will enable the manufacture of an article as easily transportable as silks to hold its own side by side with the agricultural industries in which by far the greater part of our population is engaged. The endeavor shows itself not only in the concentration of the manufacture, in the invention and increasing application of labor-saving machinery, in the use of power-loom instead of hand-loom, but also in the strenuous efforts to secure raw silk of more even and uniform quality.† The preference of American manufacturers for the best grades of raw silk, and their willingness to pay good prices for it, are not the result, as one might infer from some allusions to it, of any special virtue on their part. They are due simply to the necessities of the industrial situation. The more uniform

\* The United States consul at Lyons wrote in 1883 that, of 120,000 looms in that city, but 20,000 were power-loom. *Reports of the Consuls of the United States*, July, 1883, p. 77.

† "In Italy and in France there are two classes of silk produced: 'country silk,' which is reeled in households and by primitive methods; 'filature silk,' which has been reeled with skill and sedulous care in filatures. The 'country silk' is, of course, inferior, and very little of it is sent to this country, because it requires much labor to be expended on it in manufacturing processes. The factories of Europe, where labor is cheap, can use inferior silk to better advantage than is possible in America. The silk produced in China is, in the first instance, 'country silk'; and, to prepare it for this market, it has to be rereeled. The Japanese now have filatures, and send us silk equal to the best of European. In Asia, as in Europe, the coarser and inferior silks are kept at home; America gets the finest and best." Wyckoff, *Silk Goods*, p. 11.

On the same page, we are told that "reels for this purpose [rereeling] were in the first instance made here and sent to China; their use was brought about by the urgent and repeated representations of American merchants there." The large growth of Japanese shipments of silk to this country is said to be due to the intelligence and adaptability which the Japanese have shown in improving the reeling of silk.

the material, the more can machinery be used; the greater the use of machinery, the better the chance of the American producer.

Hence we find that the various branches of the silk manufacture have been put in a firm position in proportion to the possibility of using machinery. Sewing-silk, the earliest branch and the most firmly established, is the product of American inventions. It is not surprising that machinery should be readily adapted to the comparatively simple processes of twisting several fibres together, and then winding and spooling them,—which are the essential processes in making sewing-silk and machine-silk. Another illustration of the same tendency, and a most instructive one, is in the successful manufacture of “spun-silk” goods. These are made from waste silk; that is, from the fibres of damaged or incomplete cocoons, from those which are thrown aside as unfit for reeling in the filatures, and from the tangled waste left in the earlier operations of the silk mill. These fibres are carded and spun by methods very similar to those used for cotton, and they produce “a material of such perfect uniformity that the thread to be made from it can be produced with absolute mathematical accuracy of any required size.” The silks made from it were the original “American silks”; they are made with abundant use of machinery; they are cheap, durable, and good. But, unfortunately, they lack a certain lustre, an agreeable softness, and a peculiar rustling sound much prized by our better-halves. They are “hard,” as we are told. Those qualities in the fibre which make silks agreeable to their chief consumers seem to be lost in the processes of carding or rapid spinning, and spun-silk goods fail to displace the more insinuating articles which come from the reel. Yet their consumption has steadily increased. By mixture with reeled silk, and by other improvements, their quality has been made more agreeable.

They are said to be specially well adapted for silk prints, and in the production of these the characteristics of American manufactures are again illustrated. "In Europe, printing is done with little blocks, a few inches square, which are slowly and more or less imperfectly used in hand work. Here, ingenious machinery is employed, printing many colors at once. A machine for this purpose requires a special engine to drive it, in order to have it under absolutely accurate control as to speed, pressure, and registry. Patterns that cannot be perfectly matched by hand may be turned out faultlessly by such machinery."

The answers to the questions presented by our sketch of the history of the silk manufacture now suggest themselves. The nature of the silk fibre is an obstacle to that extensive use of labor-saving machinery which is characteristic of American industry. The field is not promising for the ingenuity and inventiveness which give American manufactures their distinctive advantages. The same reason, no doubt, explains why in Europe the silk manufacture has its chief seats in France and in Germany, and not in England. While England's textile manufactures have in general maintained their superiority over those of the Continent, the silk manufacture continued to call for protection long after the general policy of free trade had been entered on, and, in fact, suffered under the reduction and final repeal (1860) of duties on silks. The conditions on the Continent are more favorable to industries in which there is comparatively little use of machinery.

It may indeed happen that Yankee ingenuity will revolutionize the conditions of this industry. The attempts of the American manufacturers to get a more even supply of raw silk, and to apply machinery to its conversion into silk goods, may prove successful, if not throughout the industry, at least in many parts of it. The progress of the silk manufacture in recent years has been extraordinary.

Ten or fifteen years ago, American dress silks were hardly heard of, and such as existed were of harsh and poor quality. At present, much the larger part of the dress silks which are used are of American make, and they are inferior in quality to none but the choicest imported goods. The dress silks which continue to be imported are largely figured silks. Of such goods, no great quantity of any one piece can be made with profit; there are not likely to be many purchasers whose tastes will be hit by any particular pattern. It does not pay to make goods of this sort on the power-loom, which like all expensive machinery, is profitable only where it works continuously and turns out large quantities at a time. The hand-loom turns out less at a time, and is more easily transferred to a new pattern. Figured silks are therefore more often made in the old way, and for that reason again are largely imported. Probably the same conditions hold good, in greater or less degree, of other imported silk goods. The very finest qualities of dress goods, such as require much individual attention from the workman,—laces, some sorts of embroideries, velvets, and goods which are half silk, half cotton, or wool,—make up the greater part of the importations.\* But with dress goods, as with handkerchiefs, ribbons, upholstery silks, the American manufacturers have well-nigh driven out their foreign competitors. They would continue to hold their own, even if duties were considerably reduced.

What the position of the silk manufacture might be if duties were entirely swept away, it is impossible to say. Some branches of the manufacture would probably hold their own, while others would disappear. Should there continue in the future a progress such as has un-

\* I must confess that I have found no clear explanation of the continued imports of some silk goods; *e.g.*, goods of mixed materials. Possibly it is simply a matter of habit and of inexperience among domestic producers; but I suspect there is some deeper reason.

doubtedly been made in recent years in the American silk manufacture, it may happen in the end that most sorts of silks will be made here as cheaply as abroad, and that the abolition of protective duties would affect the silk manufacture as little as it would now affect the bulk of the cotton manufacture. If this proves to be the case, we shall have an example, and a striking one, of the successful application of protection to young industries. It is unlikely that any attempts at silk-making would have been made here but for the high duties of the war, and such progress as the manufacture has made may be fairly ascribed to the stimulus of protection. It remains to be seen whether this progress will be continued so far as to attain the true end of protection to young industries,—the supply of the commodity at a price below that of the foreign article. The nature of the fibre makes it improbable that there will ever be any such complete application of machinery as in the manufacture of cotton and wool; but no man can say it will not be done, for the march of invention brings many surprises. The question turns, however, on this: Unless there is continued application of machinery and continued invention of labor-saving processes, such as will make labor here more efficient than abroad, then, so long as our general economic conditions bear their present relations to those of Europe, we cannot expect the growth of a varied and independent silk manufacture.\*

\*Before leaving this topic, a word may be said on another explanation of the silk situation. Mr. J. Schoenhof, in his volume on *The Industrial Situation*, chapters vi. and vii., has come to the conclusion that the real cause of the continued imports of silks is to be found not in the conditions of the industry, but in the practice of adulteration by foreign manufacturers. He gives striking illustrations of the extent to which foreign silks are loaded with dyestuffs. Sometimes four-fifths of the weight of a piece of black silk is dye, and but one-fifth silk fibre. No doubt silks often are greatly adulterated, and very likely the practice has been more widely resorted to because of the desperate efforts of French and German manufacturers to keep their hold on the American market, in face of the high duty and the growing domestic manufacture.

We will now turn to the glass manufacture, which presents a set of phenomena analogous to those we have noted in the silk trade, and in some respects even clearer and simpler. Some sorts of glass are imported steadily in large quantities, notwithstanding high duties; other sorts are not imported at all, though the duties on them are comparatively low.\* As a glance at the table will show, the imports of plate-glass are three or four times as large as the domestic production, although the duty is very heavy, being more than a hundred per cent. on the large sizes, which are chiefly imported. Window-glass is produced in this country in greater quantity, yet even of this the imports amount to about one-third of the total consumption. The duties are specific, like those on plate-glass, and are again very heavy, amounting to one hundred per cent. on the larger sizes and to sixty per cent. on the smaller. On the other hand, the imports of ordinary moulded and pressed glass are insignificant, while

The practice is a phase, perhaps temporary, of the struggle between the old and the new methods of manufacture. But, if unadulterated American silks really satisfy the wants of consumers, and, quality for quality, are cheaper, they will hold their own in the long run, and will conquer the market, even though the change in the direction of consumption may take place slowly in the case of an article so much affected by fashion and prejudice. If, on the other hand, foreign silks, adulteration and all, prove permanently more pleasing to the consumers, whose tastes must in the long run decide what is wanted, American manufacturers will hardly hesitate — and, in fact, do not hesitate — to resort to similar adulteration. It may be, indeed, that there is a greater possibility of adulterating successfully under European than under American methods. Mr. Wyckoff tells us that “all the processes from first to last by which an inferior article can be made to appear equal to that of a higher grade are costly in labor” (*Silk Goods*, p. 26). This is a significant circumstance, and very likely goes far to explain the alleged greater purity of American silks. On the whole, while adulteration is one of the things that must be taken into account in explaining the present situation, the fundamental explanation seems to me to lie in those conditions of the industry which were described in the text, and of which, for that matter, Mr. Schoenhof’s interesting account supplies excellent illustrations.

\* The figures in the following table give the value of the product of glass-ware in the United States in 1880, as reported in the census, the value of the imports in the fiscal year 1879-80, and the rates of duty on the various sorts of

the domestic production of articles of this sort, chiefly table-ware, is enormous. The census returns of 1880 do not distinguish, as do the customs returns, between the different sorts of "glassware"; but the bulk of the large quantity of glassware produced in the country was common and inexpensive pressed glass, very little being cut or ornamented glass of an expensive sort. Yet the duty on plain glassware is only thirty-five per cent., and that on other glassware only forty per cent. The situation is much the same with glass bottles, the domestic product being large, the imports small, and the duty comparatively low.

As we might expect from these facts, the methods of production are very different for the different sorts of glass. Window-glass—to begin with an important and typical article—continues now to be made in very much the same way as in past generations, nor is there any appreciable difference between the methods of manufacture in this country and in Europe. The most important operation is that of blowing the glass. The molten material is gathered on a block of wood, and then blown into a cylindrical shape having walls of the thickness desired

glass. Where the duties are specific, as on plate and window glass, they have been reduced to an ad valorem equivalent for those qualities which are most largely imported. The figures indicate thousands of dollars. In comparing the imports and the domestic production, the former must of course be increased by the amount of the duties:—

	Imports.	Duty.	Value of product in U.S.
Plate-glass, . . . . .	1,715	60 @ 100%	868 (a)
Window-glass, . . . . .	1,427	60 @ 100%	5,047
	38	35%	
Glassware, { Plain, moulded and pressed, Cut, engraved, painted, or stained, . . . . .	722	40%	9,568
Manufactures otherwise provided for, . . . . .	951	40%	
Green glass (bottles), . . . . .	44	35%	5,670

(a) Since 1880, the production of plate-glass has increased greatly, but the imports also have increased.

for the glass. The cylinder is then loosened from the blow-pipe, split open, flattened, annealed, polished, and cut into regular shapes. In all these operations "there has not been a single inch of progress since the day when cylinder-glass was first made." Moreover, "from the very nature of the business, it is absolutely impossible to use machinery in it. The inventive genius of the American people cannot be brought to bear effectively in making window-glass. The business has to be a pure manufacture,—manual labor."\* If the processes are the same as in Europe, and the capacity and energy of the American laborers are not much greater, obviously the lower wages which the foreign manufacturer pays will enable him to offer window-glass at lower prices than his American competitor can afford. It is not surprising, therefore, that window-glass continues to be imported in face of a very high duty.

On the other hand, the manufacture of pressed glass is distinctively an American industry. "In glass-making, as in other industries, the scarcity of skilled labor drove our people to devise means for accomplishing work without its aid. We were naturally driven to machinery. To ob-

\*I quote from the argument of Mr. E. L. Day, a glass manufacturer who appeared as the representative of the American Association of Window Glass Manufacturers before the Committee of Ways and Means in 1884. *Congressional Documents, House Reports*, 1883-84, pp. 256, 257. Remarks of the same tenor are in Mr. Charles Colné's excellent report on glass in *Reports of the United States Commissioners to the Paris Exhibition of 1878*, vol. iii. p. 347. Indeed, it would seem that in one respect the methods of manufacture are more advanced in Europe than in this country. The American manufacturers themselves tell us that they generally carry on their business on a smaller scale than do their foreign competitors. See Mr. Day's statement, as cited above, p. 256. Before the Tariff Commission of 1882, the spokesman of the window-glass manufacturers said that the concerns in the United States were, on the average, only one-seventh as large as in European countries, and pleaded that "the general expenses of conducting the business of such large establishments, as is well known, make an enormous difference in the cost, enough for a fair profit to the foreign manufacturer." *Tariff Commission Report of 1882*, p. 2000. It may be noted, in this connection, that the use of gas-furnaces, a great improvement in the industry, came much earlier in Europe than in this country. Colné's *Report*, p. 352; *Census Report of 1880 on Glass*, p. 37.

viate hand-blowing, a process which is very difficult to master, shaping with press and iron moulds was substituted. The beneficial results of this invention are incalculable. It placed our manufacturers in a position to make regular and cheap wares, while skilled labor became no longer necessary. The simplicity of the operation of pressing glass was such that in a very short time men could be trained to perform the work. . . . Then came improvements fast and thick in combinations of the different pieces of moulds,—improvements in presses, and tools for holding the pieces while being fire-polished.”\* The invention of the process goes back to 1827, when the first press, for moulding tumblers, was made.† Since that time, the manufacture of flint-glass, which is chiefly tableware made by pressing, has flourished.

Before the Civil War, no permanent success was attained along the seaboard in the manufacture of window and bottle glass. In Pittsburg and other places west of the Alleghanies, window-glass works were established at an early date. Fuel and materials were abundant; and the heavy cost of inland transportation, before the days of low railroad freights, prevented any effective competition from imported glass. Near the seaboard, however, no window-glass or bottle-glass was made.‡ The manufacture of pressed glass, on the other hand, grew and prospered. From the beginning, the United States have led all countries in this branch of the industry. Many articles which elsewhere are made by blowing and subsequent

\* Colné's *Report*, as referred to above, p. 377. See also Mr. J. D. Weeks's report on glass, in the volume on manufactures in the *Census of 1880*, p. 47. Accounts of the various improvements in the pressing process are given by these writers in the passages referred to.

† Report on glass, *Census of 1880*, p. 58. Presses for simple articles seem to have been in use in England and Holland before this date. Jarves, *Reminiscences of Glass-making*, p. 93.

‡ Mr. Jarves, in his *Reminiscences*, p. 65, alludes to “the repeated failure of permanently establishing window and bottle glass works in this vicinity” (New England).

shaping with simple slow-working tools, are here made, as well or better, by pressing. So far has that process been perfected that it requires a practised eye to distinguish the best pressed glass from cut glass. Mr. Colné, in his report on the glassware exhibited at the Paris Exhibition of 1878, repeatedly commented on the superiority of American pressed glass.\* It is regularly exported in considerable quantities to Canada, the West Indies, South America, and even to Europe. If our tariff system were made more liberal, the general lowering of the scale of prices which would probably ensue would no doubt cause the exports of pressed glass, as of other manufactured articles, to increase rapidly.†

The manufacture of plate-glass presents a curious case, typical of one phase of the operation of the heavy duties imposed during the Civil War. Before 1860, plate-glass was not made in this country at all. During the war, high duties were imposed on it, and properly enough; for plate-glass is as purely an article of luxury as could be found. These duties were retained after the war closed, and, like so many others, remain now substantially as they were fixed in 1864. At first, they operated simply as revenue duties. As they were retained, however, and the price of imported glass was kept high, capital was attracted to the domestic production of plate-glass. In 1869, a factory was built in Indiana, and a few years

\* "The American pressed glass drew from the European manufacturers exclamations of astonishment when they saw the clearness, smoothness, and brilliancy of this glass, the freedom from mould-marks, and the superior execution in general. Frequent inquiries were made as to the mode of working. This was a positive proof that they consider us superior in that line. In fact, many manufacturers frankly acknowledged to me our uncontested superiority in pressed glass. Nothing could be seen elsewhere equalling our samples." *Report*, p. 365. Compare also p. 387 of the *Report*.

† The exports of glassware, which consisted almost exclusively of pressed glass, were \$750,000 in 1885, and \$774,000 in 1886. Mr. Colné, in his *Report*, p. 255, said that, "were it not for the difficulties created by the French tariff, American pressed glass could be exported to France with advantage."

later another was built in Missouri.\* A few others have since been added, and at present a large amount of capital is sunk in them. The business is one which must be conducted on a large scale, and requires much fixed capital, in the shape of buildings, furnaces, ovens, and machinery for handling the plates. The process consists, in essentials, of casting the glass in plates, which are then ground, smoothed, and polished. The conditions seem to be somewhat different from those of manufacturing window-glass, where hand labor plays a larger part; there seems to be greater opportunity for the use of machinery. But the machinery in this country seems to be the same as that used abroad, and the skilled laborers have been brought hither from foreign countries. The conditions of production are essentially the same as in Europe; and, so long as this is the case, the lower wages paid there enable plate-glass to be put on the market at a lower price. Imports to this country therefore continue, notwithstanding our high duties. It is not impossible that American ingenuity will find in this industry a congenial field, and that improvements in methods and machinery will eventually enable plate-glass to be made here as cheaply as abroad. But, if it be true, as the manufacturers state, that they cannot submit to any reduction of the present very high rates, no steps in this direction have yet been taken. The duty so far has operated purely and simply as a protective duty.

The manufacturers assert that the price of plate-glass has been reduced by their competition. The price of plate-glass has undoubtedly gone down very much in

\* See the statements made in 1884 before the Committee of Ways and Means by Mr. E. A. Hitchcock, for the Crystal Plate Glass Company of Missouri, and by Mr. W. C. DePauw, the owner of large works at New Albany, Indiana. *House Reports*, 1883-84, pp. 279-287. Mr. Hitchcock argued with much force that, since the duties on plate-glass had remained unchanged for thirteen years preceding the date (1876) when his corporation engaged in the business, it would be a breach of faith to reduce the duties in such way as to cause the loss of their capital.

recent years ; but, since imports have continued regularly, the price here has been presumably higher throughout than the price abroad. I say "presumably," because it is also asserted that the foreign producers of plate-glass have combined ; that prices are not governed by competition and cost of production, but are fixed under conditions of monopoly ; and that lower prices are offered in the United States because of our heavy duties. No doubt it is true that, where an article is monopolized and yields unusual profits, a duty, whether it stimulates domestic production or not, may cause the foreign producer to content himself with lower prices and lower profits. Under such circumstances, it may happen that the foreign producer rather than the domestic consumer bears a part or the whole of a duty. Whether this has been the result of the duty on plate-glass is not clear. On the one hand, the foreign manufacturers are few in number, produce on a large scale, and might well combine effectually. On the other hand there are establishments in various countries,—France, Belgium, Germany, and England ; and an international combination is less likely to hold together than one between persons in the same country. Statements as to combinations abroad, when made by protected competitors here, must be received with a good deal of caution.

In the manufacture of glass bottles, the general conditions are similar to those already described for window-glass. The glass is blown. Moulds are used to some extent, but little machinery.\* No doubt the characteristic differences between European and American processes show themselves in this industry. For example, the older method, still in general use abroad, was to apply a mould only for shaping the lower part of the bottle, the neck being separately shaped with pincers and forming blocks.

\* "There is no machinery used in the making of bottles, nothing but hand labor is used." Statements made in 1884 before the Committee of Ways and Means, as cited above, pp. 292, 295.

Recently, metallic moulds, into which the whole bottle is blown at once, have been invented, and are in general use in this country; but in Europe the old process was still common when Mr. Colné reported on the glass manufacture in 1878.\* On the whole, however, the industry does not seem to be one adapted to American methods of production. If we find, nevertheless, that few bottles are imported and many are made within the country, the explanation, no doubt, is to be found in the heavy cost of transportation, which gives what we may call a natural protection to the manufacture of articles so cheap and bulky as glass bottles. Even in earlier years, when duties were low, bottles were regularly manufactured, especially in places distant from the seaboard. Before the days of railroads, the heavy expense of inland transportation gave a stimulus to the manufacture of bottles, as well as of window-glass, at places like Pittsburg and Wheeling, which were near the sand, fuel, and other needed materials. In our own time, the expense of inland freight is still a premium to establishments in these places. The use of natural gas in recent years has given them a great advantage; and it is probable that they would now be little affected by a reduction of duties, except in their sale in the seaboard markets.

It would be possible to present many other illustrations of the principle which has been brought out in the discussion of silks and glassware. Earthenware continues to be imported into the United States, notwithstanding a very heavy duty. Under the low duties that prevailed before the Civil War (the duty was thirty per cent. under the act of 1846), only the cheapest and heaviest sorts of earthenware were made, such as stone jugs, drain-pipes, brown and yellow ware. The heavy cost of transporting these articles no doubt explains why they were not imported. Table-ware was supplied exclusively by importation.

\* See that gentleman's *Report*, as cited above, pp. 358, 366.

During the Civil War, duties were raised to forty-five per cent. on plain ware and fifty per cent. on decorated; and, in the act of 1883, these rates were again increased to fifty-five and sixty per cent. respectively. Under these duties, a considerable manufacture of pottery and earthenware has developed; and, at the present time, common white ware is no longer imported. But there is still a large importation of colored ware and of all sorts of finer porcelain and china. The domestic producers of tableware supply no more than half of our consumption of china and earthenware, and most of them would probably have to go to the wall if the duties were removed.\* The explanation of this state of things, strikingly in contrast with the early and assured growth of the manufacture of pressed glass, is that the potter's art has had little share in the improvements which have revolutionized so many branches of industry within the last hundred years. The potter's wheel is still the basis of the industry. The cheapening of transportation has caused the manufacture to be concentrated in larger establishments, and perhaps in fewer places, than could be found fifty or a hundred years ago; but there has been little introduction of machinery and no essential change in processes. The very mixing of the materials, which might be expected to give a good field for using power and machinery, is still done mainly by hand, attempts to use machinery having failed to hit the exact qualities wanted. Earthenware of a cheap and bulky sort is more likely to be made in large quantities of a single pattern, and affords more opportunities for using moulds, some little machinery, and labor-saving devices; it is, besides, more expensive to transport; the

\*The reader will find the materials on which this sketch is based in the report on pottery in the *Reports of the United States Commissioners to the Paris Exposition of 1878*, vol. iii. pp. 190-195; an account of the pottery manufacture in *Bradstreet's*, March 6, 1886; statements of manufacturers in *Tariff Commission Report of 1882*, pp. 613, 743, 1949; and in the statements made in 1884 before the Ways and Means Committee, *House Reports*, 1883-84, pp. 241, 244.

cheaper qualities of table-ware are consequently produced in the United States under the present high duties. The finer goods, however, where each individual piece needs more attention and requires more labor, are made in England, France, Bohemia, and are imported in face of the duties. They will doubtless continue to be imported unless our industrial conditions change greatly, or the future brings forth a series of inventions that will make the industry suited to our present conditions.

The manufacture of cutlery supplies another illustration of the uneven development of industries which are on the surface closely allied. The duty on cutlery is fifty per cent., yet there is a large and regular importation of pocket-knives. On the other hand, table cutlery, subject to the same duty, is practically not imported at all. There is a slight importation of table-knives made by certain English firms, whose products a few people, from habit or prejudice, persist in preferring; but the bulk of the table-knives used are of American make, and are as cheap as goods of the same quality are abroad. The industry being concentrated in a few large establishments, there is a strong temptation to combinations; and every few years there is a combination of the American manufacturers, which advances prices, keeps them high for a while, and then goes to pieces. But the knives are made as cheaply as they are in England or other countries, and are nominally sold at prices as low. Pocket-knives and razors, however, although made to a considerable extent, cannot be made so cheaply as in England and Germany, and continue to be imported in face of the duty. The explanation is again that machinery can be applied to the one much more than to the other. Table-knives are made in large quantities of a single pattern; they have comparatively few pieces; the blades need no very careful grinding, and grinding is still done largely by hand. A pocket-knife is a more complex thing; the pieces need to be put

together by hand, they must be made to fit neatly, the blades must be carefully ground. If the various parts of a pocket-knife could be struck off by machinery, in hundreds or thousands, perfect and complete, and then easily put together, pocket-knives would doubtless be made in this country with complete success. Watches can be made after that fashion, and afford a striking example of American enterprise, ingenuity, and success. But pocket-knives need to be of numberless patterns. The jobbers and retailers, who presumably know the likings of consumers, want few knives of any one style, and want new patterns every season. Obviously, production on a small scale, with little machinery, in the German fashion, accommodates itself to such a capricious demand much more readily than the American plan of using plant, machinery, and an inflexible process.

Indeed, pocket-knives are an exceptional article. Most smaller articles of hardware seem to afford favorable opportunities for the inventive talents of American workmen and business men. All sorts of complicated articles—watches and locomotives, door-knobs, locks, hinges, house hardware and household utensils, spades, axes, agricultural implements—are not only made cheaply and successfully at home, but, in spite of the higher price of the materials of which they are made, are regularly exported in large quantities. Where a massive kind of production is called for, a huge plant, a steady routine, a rigid economy of materials, the organization rather than the saving of labor, the English in general excel. This is probably one cause of their commanding position as producers of the cruder forms of iron,—pig-iron, bar-iron, raw steel; though much is also due to the great advantage of having rich supplies of coal very near the iron ore. In manufactures of a more delicate and refined character, if I may use such adjectives in this connection, the Americans excel. Where the nature of the material or of the product gives opportunity for

the deft use of labor-saving devices, the ingenious adaptation of a tool to just the use desired, the constant application of new inventions, American manufactures are likely to hold their own, tariff or no tariff.

In the course of the reaction which has taken place in political economy in recent years, the disposition to question the merits of the classic school has extended, first and last, to about all of its doctrines. Doubts have been expressed, not only on the theory of distribution, where there was perhaps most occasion for restatement and revision, but also on the principles of international trade, which, on the whole, needed less remodelling than any other part of the classic structure. Dr. Ingram — to take an English representative of the reaction — admits Ricardo's theory of comparative costs to be "just and interesting"; but, when Cairnes describes it as "sounding the depths" of international trade, Dr. Ingram finds the phrase magniloquent.\* Professor Held,† eminent and lamented among the Germans of the new school, considered the theory a curiosity in economic literature, and handled it with very scant respect; though it is but fair to add that, as is often the case with the protesting economists, his own discussion showed, in its details, less real divergence from the classic doctrine than his depreciation of it would lead us to expect. To the present writer, it seems clear that the phases of our economic history which have been examined in the preceding pages can be explained at bottom only on the theory of comparative costs, which, as he ventures to assert even at the risk of being thought magniloquent, sounds the depths of the international trade of the United States. The reason why the Amer-

\* Ingram's *History of Political Economy*, p. 134.

† In the *Jahrbuch für Gesetzgebung*, iii. pp. 179-182. The essay on "Protection and Free Trade," in which the reader will find the passage here referred to, is in general sound and conservative.

ican farmer does not produce flax fibre is not to be found in any obstacles from climate or physical conditions. His labor would yield as much flax, absolutely, as that of the European cultivator. He simply finds that his labor yields more in other branches of agriculture. His case is the same with beet culture. Silks were imported before 1860 not because of any inferior productiveness of American labor in making them; it was because of a lack of that superiority which existed in other directions.

In both of these great branches of production, account must be taken of moral and intellectual as well as of physical causes of a comparative advantage. The classic economists did not often trouble themselves to analyze the causes of the differing effectiveness of labor in different countries, and perhaps reasoned too much as if these causes were all of a physical and unalterable sort. Adam Smith\* shrewdly perceived that the causes of the advantages one country has over another are not all of the same kind; but he pointed out with truth that, given the advantages, they determine the course of trade. The nature and the cause of an advantage become material only when we begin to inquire whether it is likely to persist indefinitely, and whether it can be affected by legislation. Obviously, a comparative advantage which rests not on physical causes, but on differences in skill, knowledge of the arts, mechanical training, shades of character and intelligence, may be influenced, within limits, by a stimulus in the way of premium or protection. The argument for protection to young industries applies only under conditions of this latter sort. Given those condi-

\*“Whether the advantages one country has over another be natural or acquired, is in this respect of no consequence. As long as the one country has those advantages, and the other wants them, it will always be more advantageous for the latter to buy of the former than to make. It is an acquired advantage only which one artificer has over his neighbor who exercises another trade; and yet they both find it more advantageous to buy of one another, than to make what does not belong to their particular trades.” *Wealth of Nations*, Book IV., chap. ii.

tions, it may apply more widely than English economists have been disposed to grant. Protection to young industries, which Mill believed to be of possible advantage only in a young country in the earlier stages of growth, may have had occasional and unexpected successes even within the last twenty years. The history of the silk manufacture illustrates the possible turn of events; and the application of protection in the United States has been so sweeping since the Civil War that this case, while by no means typical of the usual effects, probably does not stand alone. But such exceptions serve here, as they do in all scientific investigations, to bring out the foundation of a general rule rather than to modify it. In the present case, they suggest a more careful analysis of the causes of comparative advantages in different countries, but do not affect the doctrine that these comparative advantages determine the sort of trade and division of labor that will take place between them. Such phenomena as have been described in the preceding pages still reduce themselves, in the last analysis, to illustrations of the doctrine of comparative costs.

F. W. TAUSSIG.